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Reliability and Validity of Five-Level Response Continua for the Career Decision Self-Efficacy Scale

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The present study, based on three samples of college students totaling 1,832 participants, resulted in the conclusion that a 5-level response continuum for the short form of the Career Decision Self-Efficacy Scale (CDSE)¹ proved at least as reliable and valid as the 10-level continua used in normative studies. Values of coefficient alpha ranged from .78 to .87 for the 5-level continuum, in contrast to .69 to .83 for the 10-level continuum. Criterion-related validity correlations with career indecision and vocational identity were comparable for the two response continua. Validity with respect to the scales of the Career Decision Profile was examined, as was construct validity with respect to measures of hope, goal stability, and positive and negative affect. Overall, the study suggests the psychometric quality of the CDSE when 5-level response continua are used and adds to knowledge of the nomological network of the construct.¹

Keywords: career self-efficacy, career decision self-efficacy, career decision making, Bandura's theory, career counseling

1. The original acronym CDMSE derived from the original name of the scale, the Career Decision-Making Self-Efficacy Scale (Taylor & Betz, 1983). After learning that another author had copyright to the term *career decision making*, we (Nancy Betz and Karen Taylor) changed the name of the scale to Career Decision Self-Efficacy Scale. Although veteran users of the scale are accustomed to the older acronym, newer users were confused by the lack of correspondence of the new name to the acronym. Therefore, we have decided to change the acronyms to CDSE (Career Decision Self-Efficacy Scale) and CDSE-SF (Career Decision Self-Efficacy Scale-Short Form).

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JOURNAL OF CAREER ASSESSMENT, Vol. 13 No. 2, May 2005 131-149

DOI: 10.1177/1069072704273123

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Since the initial work of Hackett and Betz (1981), hundreds of studies have applied Bandura's (1977, 1997) theory of self-efficacy expectations to the field of career development and counseling, using domains including mathematics self-efficacy (Lopez, Lent, Brown, & Gore, 1997), self-efficacy for specific occupations or occupational titles (Betz & Hackett, 1981; Turner & Lapan, 2002), career decision self-efficacy (Luzzo, 1993; Taylor & Popma, 1990), career search efficacy (Solberg, Good, Fischer, Brown, & Nord, 1995), self-efficacy for the Holland themes (Betz, Harmon, & Borgen, 1996; Lenox & Subich, 1994; Turner & Lapan, 2002), and self-efficacy for doing career counseling (O'Brien & Heppner, 1996; Perrone, Perrone, Chan, & Thomas, 2000). Self-efficacy is now a key variable in the more comprehensive social cognitive career theory of Lent, Brown, and Hackett (1994, 2000). The concept of self-efficacy is now accepted as important in understanding the career development not only of women (Betz & Hackett, 1981; Hackett & Betz, 1981) but of racial and ethnic minorities (Gloria & Hird, 1999; Hackett & Byars, 1996; Tang, Fouad, & Smith, 1999), elderly people (Cousins, 1997), persons with disabilities (Luzzo, Hitchings, Retish, & Shoemaker, 1999), female offenders (Chartrand & Rose, 1996), and anyone whose background has lacked in sources of efficacy information.

Because of its importance to career decision making and career interventions, career decision self-efficacy has received probably the most research attention relative to other domains of career behavior. Career decision self-efficacy was originally defined by Taylor and Betz (1983) as the individual's belief that he or she can successfully complete tasks necessary to making career decisions. Career decision self-efficacy was measured using the task domains of accurate self-appraisal, gathering occupational information, goal selection, planning, and problem solving. Probably because of its centrality to successful educational and career outcomes, factors related to career decision self-efficacy and the design and evaluation of interventions have received extensive attention from researchers (Betz & Luzzo, 1996).

We can now say with fair certainty that career decision-making self-efficacy is related to other indices of adaptive career decision making. For example, there is ample evidence that career decision self-efficacy is inversely related to career indecision (e.g., Bergeron & Romano, 1994; Betz, Klein, & Taylor, 1996; Taylor & Popma, 1990). Career decision self-efficacy has also been shown to be related to high versus low vocational identity (Robbins, 1985), more adaptive career beliefs (Luzzo & Day, 1999), fear of career commitment (Betz & Serling, 1993), and career exploratory behavior (Blustein, 1989). Peterson (1993a, 1993b) found that career decision making self-efficacy was related to academic persistence versus dropout in underprepared college students and that it surpassed all other variables as a predictor of academic and social integration of college students. Other studies have suggested that career decision self-efficacy can be increased through verbal persuasion, one of Bandura's postulated four sources of efficacy information (Luzzo & Taylor, 1994), through attributional retraining (Luzzo, Funk, &

Strang, 1996), and through a videotaped intervention designed to increase women's perceived career options (Foss & Slaney, 1986).

As research on career self-efficacy in general and career decision self-efficacy in particular has increased in frequency, there have also been changes in the response continuum used for its assessment. In Bandura's (1977) original theory, level and strength of self-efficacy were distinguished. Level was assessed by a "yes" or "no" response to the question, "Can you successfully perform this behavior?" Level referred to the most difficult task the individual perceived herself or himself able to perform in a sequence of progressively more difficult tasks. Strength referred to the individual's confidence in that perceived capability and was assessed with respect to each behavioral item to which a "yes" response had been given. Strength (or confidence) was assessed in such a way as to reflect a certainty belief from zero certainty (0%) to complete certainty (100%) and was thus assessed using a 100-point confidence rating. For purposes of a Likert-type scale, this confidence continuum was abbreviated to a 1 to 10 confidence rating (often obtained using a 0 to 9 Likert scale so that item responses would not consume more than one alphanumeric space in the data file). For the first 10 to 15 years of career self-efficacy research, the 10-point confidence scale remained the typical response method.

At some point, researchers began to shorten the self-efficacy response continuum to a 5-point confidence scale. Much research published in the late 1990s and early 2000s used a 5-point response continuum. For example, Bandura, Pastorelli, Barbaranelli, and Caprara (1999) used 5-point response continua to measure self-efficacy for academic achievement and social self-efficacy in children. Betz et al. (1996) used the 5-point scale in their Skills Confidence Inventory. Although the development studies of the short form of the Career Decision Self-Efficacy (CDSE-SF) (see Note 1) Scale used the 10-point response continuum, researchers are now increasingly using the 5-point response continuum (Alliman-Brissett, Turner, & Skovholt, 2004; Chung, 2002; Creed, Patton, & Watson, 2002).

Given the increasing frequency of use of 5-point response continua, evaluation of their performance relative to 10-point continua would provide useful comparative information for researchers. If, as we suspect, 5-level continua perform as well as 10-point continua, researchers can confidently use the more economical (in terms of answer sheets or computerized response options) method of obtaining confidence responses.

In evaluating the 5-level response continuum, we examined internal consistency reliability, score characteristics across gender and ethnic groups, and a number of indices of validity. Validity indices could be divided into three categories. The first category included two major scales, Osipow's (1987) Career Decision Scale and Holland, Johnston, and Asama's (1993) Vocational Identity Scale, which have been the central indices of criterion-related validity used with the CDSE, both long form and short form. Because both have been administered

with the CDSE-SF using a 10-level response continuum, direct comparison with the 5-level continuum could be made.

The second set of validity measures came from the Career Decision Profile (CDP) (Jones, 1988, 1998), an inventory of career development containing affective, cognitive, and behavioral indices. The CDP is based on an earlier career decision instrument—the Vocational Decision Scale—which attempts to provide career counselors with information related to level of decidedness, level of comfort, and reasons for indecision (Jones, 1989). The CDP has been used to assess the effectiveness of a career planning course (Johnson & Smouse, 1993), to establish typologies of clients for use in career counseling (Lee & Hong, 1998; Multon, Hammond, & Carona, 2001; Multon, Heppner, & Lapan, 1995), to evaluate the relationship of personality to career indecision (Lucas & Wanberg, 1995), and to assess career foreclosure (Brisbin & Savickas, 1994). Research suggests that it is a more comprehensive measure of career indecision than the Career Decision Scale (Stead & Watson, 1993).

The third set of validity measures attempted to assess for general dispositional characteristics of the person that have an empirical and theoretical relation to career development. The relationships of these dispositional variables to self-efficacy have only begun to be examined. These include a measure of the stability or instability of one's goals, a measure of one's ability to set goals and overcome barriers related to reaching those goals ("hope"), and a measure of the orthogonal constructs of positive and negative affectivity.

Goal instability is a construct proposed by Robbins and Patton (1985) to reflect the individual's ability to guide his or her behavior based on a system of goal-setting ideals. Goal instability, the absence of such goals, may be manifested in a lack of goal-directedness, a fear of commitment, and a longing for attachment to perceived powerful others. Unstable goals have been observed to be related to a general lack of direction (Salomone, 1982) and have been found to have a direct impact on the career exploration process (Blustein, 1989). The Goal Instability Scale (GIS) was constructed to measure the impact of this aspect of Kohut's theory on career exploration (Robbins & Patton, 1985). From Kohut's perspective, the "idealizing" self has a significant impact on career decisiveness, through its impact on one's possession of a coherent set of values and goals. This instrument has been used to examine psychological distress in career counseling (Multon, Heppner, Gysbers, Zook, & Ellis-Kalton, 2001), decision-making subtypes of high school and college students (Multon et al., 1995; Multon, Hammond et al., 2001), and the impact of career-related workshops (Mawson & Kahn, 1993; Robbins & Tucker, 1986) and courses (Robbins, 1987). The GIS has also been used to study adjustment to college (Robbins, Lese, & Herrick, 1993; Schwitzer & Robbins, 1988; Schwitzer, Robbins, & McGovern, 1993) and the impact of learning skills courses (Scott & Robbins, 1985). In the Multon et al. (1995) study of career decision-making subtypes, the relationship of the GIS to a measure of self-efficacy of guidance competencies (Missouri Comprehensive Guidance Competency Survey, MCGCS) (Gysbers, Lapan, Multon, & Lukin,

1992) in three areas (career planning, knowledge of self and others, and educational and vocational development) was strong ($r = -.51$). That is, the higher level of goal instability, the lower the self-efficacy. Thus, we postulated that the GIS would be related to career decision self-efficacy.

Hope (Snyder et al., 1991) facilitates our focusing on individuals' ability to set goals for themselves and find ways to reach those goals. Goals can be focused on attaining something, maintaining an existing goal, or increasing the results of an attained goal (positive goal outcome) or on avoiding or delaying an outcome (negative goal outcome) (Snyder, 2002). The first component of hope, "pathways thinking," facilitates the individual's development of options or ways to achieve the goal, whereas "agency thinking" focuses our attention on using the options to reach our goals (Snyder, 2002). The Hope Scale (Snyder et al., 1991) has been used to increase the effectiveness of a ropes course for at-risk youth (Robitschek, 1996), to predict academic and athletic success in college (Curry, Snyder, Cook, Ruby, & Rehm, 1997; Snyder et al., 2002), and to examine differences in career decision-making types (Multon et al., 1995, 2001). The MCGCS (Gysbers et al., 1992), a measure of self-efficacy, had a significant positive relationship with both the Pathways subscale ($r = .47$) and the Agency subscale ($r = .55$) in the study by Multon and her colleagues (1995).

Positive affect and negative affect have been found to be orthogonal constructs (Watson, Clark, & Tellegen, 1988). Examination of these constructs has been extensive in relation to work stress, satisfaction, and coping (e.g., Connolly & Viswesvaran, 2000), but only a few studies have examined the impact of these constructs on career decision making (Multon, Hammond et al., 2001; Multon et al., 1995). The MCGES (Gysbers et al., 1992) demonstrated a significant positive relationship with positive affectivity ($r = .42$) but not with negative affectivity ($r = -.18$) (Multon et al., 1995). In a study examining problem-solving ability (Elliott, Herrick, & MacNair, 1994), a relationship between positive and negative affect and the individual's estimates of problem-solving efficacy was observed. This suggests a relationship to career decision making that needs to be further examined.

A third major purpose of the present series of studies was to provide a large enough sample to compare the career decision self-efficacy of several ethnic groups. Although findings of gender similarity rather than difference have characterized this literature (Betz et al., 1996; Betz & Luzzo, 1996; Chung, 2002), much less is known about ethnic differences, because samples are often too small to analyze. Two studies that attempted to examine these issues using the CDSE-SF (Chung, 2002; Gloria & Hird, 1999) appear to come to different conclusions. Chung (2002) reported no significant differences between African Americans and Caucasians, using a sample of 61 African American students and 69 Caucasian students from a southern university. Although he gathered data on other minority groups, he considered the total number of participants to be insufficient for analysis ($N = 20$) and so limited his analysis to that between African American and Caucasian students. Gloria and Hird (1999) reported significant-

ly higher career decision self-efficacy in Caucasian participants versus a mixed group of racial and ethnic minorities and international students enrolled in a university in the Rocky Mountain region of the United States. The sample of 98 included Asian, Latino and Latina, Pacific Islander, American Indian, African American, biracial, and international students. The interpretability of this study is difficult, because of the admixture of U.S. racial and ethnic minorities and international students. In contrast, Peterson (1993a, 1993b) found that in comparison to Caucasian, Native American, and Asian underprepared college students, African American students reported significantly higher levels of career decision self-efficacy. Given both inconsistent findings and small samples in the previous studies, we collected three large samples, totaling more than 1,800 students, hoping to include adequate numbers of various ethnic groups that could be meaningfully analyzed.

The purposes of the present studies were threefold: to compare the psychometric characteristics of a 5-level to the 10-level response continuum for the CDSE, to compare CDSE scores by gender and ethnicity, and to compare construct validity data obtained from the five-level response scores to analogous studies using the 10-point continuum. Variables used to examine construct validity herein included several variables not previously examined in relationship to career decision self-efficacy, in particular the Career Decision Profile, Goal Instability Scale, Hope Scale, and Positive and Negative Affect Schedule (PANAS).

METHOD

Samples

Sample 1. Participants in Sample 1 were 627 undergraduates enrolled in introductory psychology courses at a large midwestern university. Students received course credit for their participation. All experiments were posted on the Research Experience Program Web site, allowing students to select from a variety of experiments.

All but four participants indicated their gender, resulting in a breakdown of 346 (55.5%) females and 277 (44.5%) males. In racial and ethnic composition, 80% of respondents indicated they were Caucasian, 9% African American, 6% Asian American/Pacific Islander, 2% Latino/Latina/Hispanic, 1% multiracial, and 1% Native American. Eighty percent of participants indicated they were freshmen, 13% sophomores, 5% juniors, and 1.4% seniors.

Participants were tested in groups of 25 to 60 in classrooms on the campus. They were given both oral and written instructions for completing the measures. Following completion, students were given a handout describing the purpose of

the study and providing a list of counseling referrals should their participation cause them any kind of distress.

Sample 2. Participants in Sample 2 were 405 students, 129 males and 276 females, enrolled in introductory psychology classes at the same large midwestern university. Recruitment of the participants was conducted via a designated Web site depicting the location, time, and general nature of the study. Participation was voluntary, and although students received course credit as compensation, there were other ways of earning this credit and students could choose from a variety of research studies in which to participate.

Of the sample, 83.7% ($n = 339$) identified themselves as Caucasian, 7.4% ($n = 30$) as African American, 5.7% ($n = 23$) as Asian American/Pacific Islander, 2.0% ($n = 8$) as Latino/Latina/Hispanic, and 0.7% ($n = 3$) as Native American, with the remaining 0.5% ($n = 2$) failing to specify their racial and ethnic identity. First-year students comprised 78% of the sample ($n = 314$), 13% ($n = 53$) were sophomores, 6% ($n = 24$) were juniors, and 3% ($n = 12$) were seniors. The mean age of participants was 18.8 years ($SD = 2.2$ years).

Sample 3. Participants were 400 students solicited from the student population of a small, private university located in the Midwest and affiliated with the Presbyterian Church. The final group of participants included 177 males (44.3%) and 223 females (55.8%). Individuals represented the following racial and ethnic categories: Native American ($n = 18$, 4.5%), African American ($n = 52$, 13.0%), Hispanic/Latino/Latina ($n = 22$, 5.5%), Asian American/Pacific Islander ($n = 10$, 2.5%), Caucasian ($n = 295$, 73.8%), and other ($n = 3$, 0.8%). Approval was obtained from the Institutional Review Board to initiate this research project using undergraduate students. Because this institution purposefully maintains small courses, a multilayered plan for data gathering was implemented. The plan to gather data contained three routes for obtaining student participation: (a) new student orientation program participation, (b) classroom completion of packets or solicitation of participation in the research project, and (c) invitations to participate after presentations to students. Freshmen ($n = 251$) comprised 62.8% of the sample, sophomores ($n = 70$) 17.5%, juniors ($n = 40$) 10.0%, and seniors ($n = 39$) 9.8%.

Measures

Career Decision Self-Efficacy Scale. The CDSE-SF (Betz et al., 1996) (see Note 1) was used as a measure of self-efficacy expectations for successfully completing tasks requisite to making good career decisions. The CDSE-SF contains 25 items measuring the five career choice competencies of Crites' (1978) model of career maturity, namely self-appraisal, gathering occupational information, goal selection, planning, and problem solving. Responses were obtained on a 5-

point scale ranging from *no confidence at all* (1) to *complete confidence* (5). A total score is computed by summing over the 25 items; higher scores indicate greater levels of career decision self-efficacy.

Career Decision Scale (used in Samples 1 and 2). Career indecision was measured with the Career Decision Scale (CDS) (Osipow, 1987; Osipow, Carney, & Barak, 1976). The CDS consists of 18 items relating to various aspects of vocational decision making and was developed to measure vocational or educational indecision in college students. Responses are given on a 4-point Likert-type scale ranging from *exactly like me* (4) to *not at all like me* (1). A combination of an individual's scores on Items 1 and 2 provides a measure of vocational or educational decidedness, although this score was not used herein. Items 3 through 18 are summed to provide an index of career indecision, with total scores ranging from 16 to 64; higher scores indicate less career certainty and greater levels of indecision.

Osipow et al. (1976) reported 2-week test-retest reliability coefficients of .90 and .81 for the indecision score in two samples of college students. The CDS manual provides evidence for the validity of the scale (Osipow, 1987). The value of coefficient alpha for the career indecision score was .88 for both Sample 1 and Sample 2 herein.

Vocational Identity Scale. The Vocational Identity Scale was part of the inventory My Vocational Situation (Holland, Daiger, & Power, 1980) but is now often used as a stand-alone measure (Holland et al., 1993). The Vocational Identity Scale assesses the level of clarity that one has regarding one's goals, skills, and interests (Holland et al., 1993). Test-retest reliability coefficients for 1 to 2 weeks are reported to range from .63 to .93, and alpha coefficients are .84 and .94 for freshmen college men and women, respectively. The alpha coefficient for the Vocational Identity Scale for Sample 3 was .90.

CDP. The CDP (Jones, 1988) provides scales to assess level of career decidedness, cognitive career-specific characteristics (Self-Clarity, Knowledge About Occupations, and Training and Career Choice Importance), an affective career-specific characteristic (Comfort), and a general cognitive characteristic of decisiveness. Jones (1998) summarized studies examining the reliability and validity of this instrument. He reported test-retest (3 weeks) reliability coefficients ranged from .66 (Decidedness) to .80 (Self-Clarity). Alpha coefficients for the normative samples of college students ranged from a low of .59 (Choice Importance) to .84 for Self-Clarity. Intercorrelations among the four reasons scales (Self-Clarity, Knowledge About Occupations, Training and Career Choice Importance, and Decisiveness) were reported as low (five < .22 and one = .41). Alpha coefficients in Sample 3 were as follows: Decidedness (.85), Comfort (.77), Self-Clarity (.87), Decisiveness (.90), Knowledge About Occupations (.69), and Career Choice Importance (.68).

GIS. The GIS (Robbins & Patton, 1985) is a 10-item, self-report measure designed to assess an individual's "lack of goal directedness and inhibition in work" (p. 226). Items are written using 6-point Likert-type scales. An example of the items in this scale is, "It's easier for me to start than to finish projects." The scale is scored such that higher scores indicate higher goal stability (lower goal instability). The authors reported an alpha coefficient of .81 in the normative sample, with a test-retest reliability coefficient of .76 over a 2-week period. The value of the alpha coefficient in Sample 3 was .85.

Hope Scale. The Hope Scale (Snyder et al., 1991) is a measure that assesses cognitive dispositional attributes through two four-item scales named Agency (i.e., a positive expectation for goal attainment) and Pathways (i.e., a successful sense of planning to meet one's goals). Coefficient alphas for the Agency subscale were reported as .71 to .76 and for Pathways .63 to .80. Test-retest coefficients after 3 to 10 weeks were reported to range from .73 to .85. The alpha coefficients for Sample 3 herein were .77 for the Agency subscale and .65 for the Pathways subscale.

PANAS. Finally, we included the PANAS (Watson et al., 1988) as a measure of general affective disposition that has been demonstrated to have implications for career counseling. The PANAS consists of two 10-item mood scales, Positive Affectivity and Negative Affectivity, which are not significantly correlated. People who score high on Positive Affectivity tend to have high energy, full concentration, and alertness. Those individuals who score high on Negative Affectivity tend to dwell on negative aspects of themselves and their surroundings. All measures demonstrated adequate reliability and validity. In the normative samples, coefficient alphas for PANAS Positive and Negative subscales using "the last year" time instructions were .86 and .84, respectively. Test-retest reliabilities, using the same time frame, over an 6-week period were .63 and .60, respectively. For Sample 3, coefficient alphas were .85 for Positive Affectivity and .88 for Negative Affectivity.

Procedures

The CDSE-SF using a 5-point response continuum was administered in all three samples, for a total of 1,832 participants. The CDS was administered in Samples 1 and 2. The CDP, Goal Instability Scale, Hope Scale, and PANAS were administered in Sample 3.

RESULTS

The first set of analyses examined the score characteristics of the 5-level response continuum for the CDSE-SF as studied in three samples herein, compared with previous studies using the 10-level response continuum.

Table 1 provides values of coefficient alpha across response methods. The 10-level response continuum was used in the normative study of the CDMSE short form (Betz et al., 1996) and in Betz and Voyten (1997). These studies used samples demographically similar to those studied here—college students, heavily freshmen with representation of sophomores, juniors, and seniors, with somewhat more females than males, and with small representations of African Americans, Asian Americans, and Hispanics. Values of alpha for the 10-level continuum ranged from .73 to .83 (Betz et al., 1996) and .69 to .83 (Betz & Voyten, 1997). Values for the 5-level continuum herein were actually somewhat higher, ranging from .80 to .84 (Sample 1), .81 to .87 (Sample 2), and .78 to .85 (Sample 3). In all five samples, the most reliable subscale is Goal Selection, and the least reliable are Self-Appraisal and Problem Solving. The total score is highly reliable regardless of the response method used, with alphas ranging from .93 to .95.

Previous results concerning the CDSE had indicated an absence of gender differences but inconsistent results regarding ethnic group differences as indicated earlier. Two-way multivariate analyses of the five CDSE-SF subscale scores by gender and ethnicity indicated no significant multivariate effects for either gender or ethnicity, Pillai's trace statistic = .003, $F(5, 1708) = 1.01$, $p > .05$, for gender, and Pillai's trace = .01, $F(15, 5130)$, $p > .05$, for ethnicity. There was no gender by ethnicity interaction. A two-way univariate analysis of variance (ANOVA) for the CDSE total score by gender and ethnicity indicated no main or interaction effects.

Means on all CDSE-SF scales for the four ethnic groups with sample sizes greater than 60 are shown in Table 2. Mean scores represent the average response over the five items of the subscale; that is, the sum of the response scores for the five subscale items would be divided by five to get the average item response. Similarly the cumulative score over all 25 items is divided by 25 to obtain the average score. The advantage of an average score is that it is directly interpretable as a degree of confidence. Because there were no gender differences in CDSE-SF scores, nor any interactions, means for ethnic samples are shown.² Although means within subscales show small differences across groups, if one examines the CDSE-SF total scores, the similarity of self-efficacy levels across the four groups becomes apparent.²

In addition to analyses by gender and ethnicity, a one-way multivariate analysis of variance using the five subscales by year in school indicated no effects for year in school (Pillai's trace = .013, $F = 1.585$, $p > .05$). Similarly, a one-way

2. Means and standard deviations for gender and ethnicity subgroups are available from Nancy Betz. Percentiles corresponding to CDSE-SF subscale scores and total score are also available.

Table 1
Comparison of Values of Coefficient Alpha for the
10-Response and 5-Response Continua on the Short
Form of the Career Decision Self-Efficacy Scale

CDSE-SF Scale	10-point		5-point		
	Betz et al. (1996) (<i>n</i> = 180)	Betz & Voyten (1997) (<i>n</i> = 350)	Sample 1 (<i>n</i> = 603)	Sample 2 (<i>n</i> = 423)	Sample 3 (<i>n</i> = 400)
Self-Appraisal	.73	.71	.81	.81	.80
Occupational Information	.78	.78	.82	.82	.79
Goal Selection	.83	.83	.84	.87	.85
Planning	.81	.77	.84	.82	.79
Problem Solving	.75	.69	.80	.81	.78
Total Score	.94	.93	.95	.95	.94

Note. The studies to which the present data were compared were Betz, Klein, and Taylor (1996) and Betz and Voyten (1997).

Table 2
Mean Scores on the Short Form of the Career Decision
Self-Efficacy Scale for Four Ethnic Groups

CDSE-SF Scale	Caucasian (<i>n</i> = 1399)		African American (<i>n</i> = 188)		Asian American (<i>n</i> = 71)		Hispanic/ Latino/Latina (<i>n</i> = 62)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-Appraisal	3.9	0.70	4.0	0.69	3.9	0.59	3.9	0.69
Occupational Information	3.9	0.73	4.1	0.76	3.9	0.67	4.0	0.83
Goal Selection	3.7	0.82	3.9	0.79	3.8	0.72	3.9	0.78
Planning	3.8	0.74	3.9	0.81	3.7	0.66	3.8	0.97
Problem Solving	3.7	0.71	3.8	0.79	3.7	0.56	3.7	0.78
Total	3.8	0.65	3.9	0.69	3.8	0.55	3.9	0.73

ANOVA using the total score also indicated no significant differences ($F = 1.768$, $p > .05$). Means for freshmen ($n = 1344$), sophomores ($n = 255$), juniors ($n = 114$), and seniors ($n = 61$) were 3.9, 3.9, 3.8, and 4.0, respectively. In a similar vein, there were no significant correlations between any of the CDSE scales and age or between the total score and age.

Examination of the validity of the CDSE-SF using the 5-level response continuum involved both criterion-related and construct validity relationships, which are shown in Tables 3 through 5. First, correlations with other indices of

Table 3
Correlations Between the Short Form of the Career Decision Self-Efficacy Scale and Both Career Decision Scale and Vocational Identity Scale

CDSE-SF Scale	Career Decision Scale			Vocational Identity Scale	
	Betz et al. (1996)	Sample 1	Sample 2	Betz et al. (1996)	Sample 3
Self-Appraisal	-.51	-.44	-.47	.53	.57
Occupational Information	-.40	-.42	-.41	.42	.45
Goal Selection	-.63	-.56	-.63	.62	.70
Planning	-.49	-.47	-.48	.51	.50
Problem Solving	-.34	-.37	-.30	.37	.42
Total Score	-.56	-.54	-.52	.58	.42

Note. The study to which the present data were compared is Betz, Klein, and Taylor (1996).

Table 4
Correlations Between Career Decision Self-Efficacy and Career Decision Profile Subscales

CDSE Scale	Career Decision Profile					
	Comfort	Decided- ness	Self- Clarity	Occupational/ Educational Knowledge	Choice Importance	Decisive- ness
Self-Appraisal	.40	.36	.40	.29	.36	.42
Occupational Information	.31	.26	.31	.25	.26	.29
Goal Selection	.58	.53	.49	.39	.53	.44
Planning	.35	.31	.33	.28	.31	.36
Problem Solving	.26	.14	.33	.23	.14	.36
Total Score	.44	.38	.43	.33	.38	.43

Note. For $n = 400$, $r > .13$ and $.17$ are significant at .01 and .001, respectively.

adaptive career development are shown in Tables 3 and 4. We expected high correlations both with the Indecision subscale from the CDS and with Holland et al.'s (1993) Vocational Identity Scale. For the CDS, the correlations with the CDSE-SF using the 5-level response continuum ranged from $-.37$ (Problem Solving) to $-.56$ (Goal Selection) in Sample 1 and from $-.30$ (Problem Solving) to $-.63$ (Goal Selection) in Sample 2. These can be compared with a range of $-.34$ (Problem Solving) and $-.63$ (Goal Selection) for the 10-point response continuum (Betz et al., 1996). For the Vocational Identity Scale, the correlations with CDSE-SF scores ranged from .42 to .70 with the five subscales and .61 with the total CDSE-

Table 5
Correlations Between Career Decision Self-Efficacy
Subscales and Construct Validity Measures

CDSE Scale	Goal Instability	Hope Scale		PANAS	
		Agency	Pathways	Positive	Negative
Self-Appraisal	.47	.49	.41	.41	-.29
Occupational Information	.37	.38	.35	.35	-.22
Goal Selection	.51	.42	.31	.40	-.24
Planning	.44	.46	.38	.38	-.26
Problem Solving	.45	.51	.43	.40	-.26
Total Score	.52	.52	.43	.45	-.29

Note. PANAS = Positive and Negative Affect Schedule. For $n = 400$, $r > .13$ and $r > .17$ are statistically significant at .01 and .001, respectively. For reasons of practical significance, however, we do not recommend interpretation of values of r below .20.

SF score. These values may be compared with those of .37 to .62 for the subscales and .58 for the total score for the 10-response version (Betz et al., 1996). The correlations of the Goal Selection subscale of the CDSE with other variables are actually higher than are those of the CDSE total score—for example, the correlation of Goal Selection with career indecision in Betz et al. (1996) was $-.63$, compared with a correlation of $-.56$ between the total score and career indecision. Similarly the correlation with vocational identity was .62 for Goal Selection and .58 for the total score. Although these differences are not large, they are noteworthy given that Goal Selection is based on only 5 items, whereas the total score is based on 25 items.

We expected moderate to strong relationships with the scales of the CDP and postulated highest correlations between the analogous Self-Appraisal (Self-Clarity on the CDP) and Occupational Information subscales (Occupations and Training on the CDP). As shown in the table, values of r were modest in magnitude, generally in the .20s and .30s. The correlation between Self-Appraisal and Self-Clarity was .40, but that between Occupational Information and Knowledge of Occupations and Training was only .25. The highest correlations with CDP subscales were between CDSE-SF Goal Selection and CDP Decidedness (.53), Self-Clarity (.49), and Career Choice Importance (.58). Again, the correlations with Goal Selection are larger than those with the total score.

Correlations of the CDSE-SF scales with construct validity measures are shown in Table 5. First, CDSE-SF scores are moderately related to the Goal Instability Scale—the positive correlations indicate that higher confidence is associated with more stable goals. We postulated that the Agency subscale of the Hope Scale would be most highly correlated with the Goal Selection subscale of the CDSE—this correlation was .42, statistically significant and moderate in

magnitude but not as high as that of Agency with the Self-Appraisal (.49), Planning (.46), and Problem-Solving (.51) subscales. The correlation of Agency with the total CDSE score was .52. We postulated that the Pathways subscale would correlate most highly with Problem Solving, and this was shown to be true with an r of .43. However, the correlation with Self-Appraisal was .41 and that with Planning was .38.

Finally, significant, although modest, relationships were found between career decision self-efficacy and positive and negative affect. Correlations with positive affect ranged from .35 (Occupational Information) to .41 (Self-Appraisal); those with negative affect ranged from $-.22$ (Occupational Information) to $-.29$ (Self-Appraisal).

DISCUSSION

The present study, based on three samples of college students totaling 1,832 participants, was designed to compare the reliability and validity of a 5-level response continuum to data obtained from previous studies using the 10-level response continuum with the CDSE-SF. The two previous studies were those of Betz et al. (1996) and Betz and Vuyten (1997). This comparison resulted in the conclusion that a 5-level response continuum provides at least as reliable and valid measurement as does a 10-point confidence continuum. Values of coefficient alpha for the 5-level continuum were actually higher than those for the 10-level continuum, especially for the five 5-item subscales. The alphas ranged from .78 to .87 for the 5-level continuum, in contrast to .69 to .83 for the 10-level continuum. Alphas for the 25-item total score were uniformly high, ranging from .93 to .95. The improvement in reliability was most important for the Self-Appraisal and Problem-Solving subscales, which had alphas in the high 60s or low 70s using the 10-level response version but .80 or .81 using the five-level continuum.

Criterion-related validity was comparable for the two response continua. Correlations of the CDSE-SF subscales with career indecision ranged from $-.34$ to $-.63$ (10-level) and $-.30$ to $-.63$ (5-level). Correlations with the Vocational Identity Scale (Holland et al., 1993) ranged from .37 to .62 (10-level) and .42 to .70 (five-level). Correlations with the CDP also suggested the validity of a 5-level response continuum, although there were no comparative data in this case.

In addition to comparing the two response continua, this study was designed to examine validity relative to measures not previously examined in this context. Correlations with the CDP were generally moderate in size and were highest for the Goal Selection subscale of the CDSE-SF. For example, a correlation of .58 was found between Goal Selection subscale and the CDP Comfort Scale. The CDP Comfort Scale is designed to reflect a state of positive affect with respect to one's career decisional status; because self-efficacy refers to behaviorally focused

cognitions, the high correlation is interesting. Also interesting is the fact that the correlations of the Goal Selection subscale with the CDP scores were higher (.39-.58) than were those of the CDSE-SF total score with CDP scores (.33-.44).

Low to moderate correlations between the CDSE-SF scale scores and scores on the Goal Instability Scale, Hope Scale, and PANAS confirm the need for attention to self-efficacy as a separate construct. The low to moderate and positive nature of correlations between the CDSE-SF scales and possession of a stable set of goals, an ability to set goals, and the ability to find ways to get around barriers to goal achievement suggests that self-efficacy plays a role in one's ability to enact these constructs. The low to moderate and positive nature of the correlations between the CDSE-SF and the Positive Affectivity Scale suggests that positive affect may play a part in the construct of self-efficacy. The small negative correlations between CDSE-SF scales and Negative Affectivity suggest that the latter construct plays a smaller role in the construct of self-efficacy. Overall, these patterns of correlations add to knowledge of the nomological network (Cronbach & Meehl, 1955) of career decision-making self-efficacy.

In addition to providing strong support for the use of a 5-point confidence continuum in the assessment of career self-efficacy, the study provided some interesting and useful new validity evidence for the CDSE-SF. This study suggests the relative superiority of the Goal Selection subscale of the CDSE-SF in terms of both reliability and validity. Across five samples, including three herein, it is the most reliable subscale, the only one with alphas consistently greater than .80. Given that this subscale has only five items, an alpha greater than .80 (including a value of .87 in Sample 2 herein) is impressive (Nunnally & Bernstein, 1994). The correlations of Goal Selection with the other indices of adaptive career development were also the highest shown herein. Correlations of -.63 with career indecision, .70 with the Vocational Identity Scale, and .58 with the CDP Comfort Scale again show impressive criterion-related validity for the five-item subscale. Examining the item content of this subscale—for example, "Choose a major from among a list of potential majors you are considering" and "Make a career decision and then not worry whether it was right or wrong"—does imply a successful outcome of the career decision-making process, even though in both the model and the measure, Planning and Problem Solving are assumed essential steps following a successful decisional outcome. Thus the high correlations of this Goal Selection subscale with other indices of adaptive decision making make logical sense.

In summary, the results of this comparative analysis of the 10- and 5-point item response formats suggest that the shorter format is at least as effective as the original 10-level response format. This briefer format will allow both researchers and practitioners greater flexibility in administration and feedback, while ensuring that both formats will produce similar results.

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